REMARKS

Claims 1, 7-10, 13 and 14 are currently pending in the present application. Claims 1, 9 and 10 have been amended to make editorial changes. Claim 18 has been cancelled herein. No new matter has been added by way of the present claim amendments.

Applicants respectfully submit that no new issues are raised that would present the Examiner with the burden of additional search and/or consideration. For instance, Applicants are simply clarifying arguments already of record. In the event that the present submission does not place the application into condition for allowance, entry thereof is respectfully requested as placing the application into better form for appeal.

Claim Objection

Claim 18 stands objected to because the subject matter therein does not appear to further limit the scope of independent claim 1. Claim 18 has been cancelled in the present response, so the outstanding claim objection is rendered moot. Withdrawal thereof is respectfully requested.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1, 9 and 10 stand rejected as being indefinite. Specifically, claims 1, 9 and 10 stand rejected because the Examiner is unclear as to whether the claimed method is referring to one cationic starch (A) or different cationic starches (A), and the Examiner is unclear of the units associated with the recited solid content.

Claims 1, 9 and 10 have been amended herein to clarify that the claimed method is referring to one cationic starch (A) by changing "a cationic starch" to "said cationic starch". Claims 1, 9 and 10 have also been amended to clarify that the emulsion solid content is in weight percent.

Accordingly, Applicants submit that the Examiner's concerns have been fully addressed. Withdrawal of the outstanding rejections is respectfully requested.

Rejections Under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)

The following rejections are outstanding in the present application:

Claims 1, 9, 10, 13, 14 and 18 stand rejected under 35 U.S.C. §103(a) as obvious over **USP 6,753,377 to Niinikoski et al.** (hereinafter "Niinikoski") in view of **USP 3,632,585 to Gramera et al.** (hereinafter "Gramera") and as evidenced by **Brandrup et al., Polymer Handbook** (hereinafter "Polymer Handbook").

Claims 7 and 8 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over **Niinikoski**.

Legal Standard for Determining Anticipation

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis*

verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet,* 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l* Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be

sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab,* 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee,* 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Supreme Court of the United States has recently held that the teaching, suggestion, motivation test is a valid test for obviousness, but one which cannot be too rigidly applied. See *KSR Int'l Co. v Teleflex Inc.*, 127 S. Ct. 1727 (2007).

The Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007) reaffirmed the Graham factors in the determination of obviousness under 35 U.S.C. § 103(a). The four factual inquiries under Graham are:

(a) determining the scope and contents of the prior art;

(b) ascertaining the differences between the prior art and the claims in issue;

(c) resolving the level of ordinary skill in the pertinent art; and

(d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

The Court in *KSR Int'l Co. v. Teleflex, Inc., supra.,* did not totally reject the use of "teaching, suggestion, or motivation" as a factor in the obviousness analysis. Rather, the Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a).

Even so, the Court in *KSR Int'l Co. v. Teleflex, Inc., ibid.,* rejected a rigid application of the "teaching, suggestion, or motivation" (TSM) test, which required a showing of some teaching, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the prior art elements in the manner claimed in the application or patent before holding the claimed subject matter to be obvious.

Advantages of the Present Invention

The present invention provides a method of improving the paper qualities of a pulp sheet, which comprises adding the paper quality improver for internal addition to pulp slurry at the time of papermaking. The paper quality improver for internal addition according to the present invention exhibits a significant effect on improvement of stiffness, and is thus preferably used for the purpose of improving stiffness.

Distinctions Between the Present Invention and the Cited Prior Art

The outstanding rejections are based primarily on Niinikoski. However, Applicants respectfully submit that Niinikoski does not teach or suggest the presently claimed invention for, at least, the following reasons: **(i)** Niinikoski does not disclose the recited suspension polymerization, emulsion polymerization or dispersion polymerization; **(ii)** Niinikoski does not disclose the recited polymer particles having the vinyl monomer-derived structural units; and **(iii)** Niinikoski does not obtain a pulp sheet which is equivalent to that disclosed in the present invention. Each of the noted distinctions between Niinikoski and the present invention will be discussed, in turn, below.

(i) Method of Making the Claimed Polymer Particles (B)

In the polymer emulsion used by the claimed method, the cationic starch (A) and the polymer particles (B) do not bond to each other. The polymer particles (B) used in the claimed method are obtained by suspension polymerization, emulsion polymerization or dispersion polymerization. The polymer particles (B) of the claimed method principally contain vinyl acetate comprising a water-soluble monomer.

However, the polymer disclosed in Niinikoski is obtained by copolymerizing starch with a hydrophobic monomer. The polymer of Niinikoski et al. is obtained by precipitation polymerization. Thus, it is apparent that the polymer of Niinikoski is obtained by precipitation polymerization and necessarily includes a hydrophobic monomer, such as styrene and butyl acrylate. *See* col. 3, lines 28-31.

Accordingly, Niinikoski does not teach a method of making polymer particles (B) which is within the scope of the present invention.

(ii) Polymer Particles (B) Comprising Vinyl Acetate Units

The present invention recites that the polymer particles (B) comprise at least vinyl monomer-derived structural units comprising 94.66 wt. % to 100 wt. % of vinyl acetate units.

Niinikoski fails to disclose the presence of a homopolymer of vinyl acetate. As discussed above, the polymer of Niinikoski is obtained by precipitation polymerization of starch with a hydrophobic monomer. Moreover, Niinikoski discloses, in col. 4, line 28-35, that copolymerization of starch with a vinyl monomer proceeds by precipitation polymerization; and a hydrophobic substituent bonds to the starch dissolved in the water to separate the starch from an aqueous layer. Simply put, hydrophobic monomers such as styrene or butyl acrylate are necessary to the practice of the Niinikoski invention.

In fact, Niinikoski teaches away from the use of an emulsifier or water-soluble monomer, by disclosing that the use of such components does not allow for the surface structure of the polymer to be similar to the surface sizing starch, which is the object of the Niinikoski invention. *See* col. 1, line 66 – col. 2, line 12. Moreover, Niinikoski discloses that an amount of an obtained homopolymer is very small. *See* col. 5, lines 5-6.

Thus, for the above-noted reasons Niinikoski fails to teach or suggest using 100% of vinyl acetate, as is recited in the presently claimed invention.

(iii) The Pulp Sheet

The presently claimed invention adds a polymer emulsion to pulp slurry at the time of papermaking. It is important to the practice of the present invention that the steps enumerated in the present claims are followed, in order to obtain a pulp sheet that possesses the aforementioned advantages of the present invention.

However, as discussed above, Niinikoski does not utilize the recited methods of making polymer particles (B) and, thus, Niinikoski does not obtain polymer particles (B) that are within the scope of the present invention. *See* above arguments (i) and (ii). Thus, Niinikoski does not obtain a pulp sheet that is in accordance with the presently claimed invention.

The results of the practice of Niinikoski's disclosed method are apparent in a review of the claims. In claim 1, section (b) of Niinikoski it is recited that the starch bonds to a vinyl monomer. Thus, in Niinikoski starch is copolymerized with a monomer. *See* also col. 4, lines 16-20. The noted copolymerization proceeds by precipitation polymerization, wherein the starch dissolved in water bonds to a hydrophobic substituent, and the starch separates from an aqueous layer. *See* col. 4, lines 28-35. Notably, the disclosed precipitation polymerization does not require a surfactant.

Applicants recognize that Niinikoski discloses a prior art reference, which discloses the use of a conventionally used surfactant, wherein the polymerization proceeds in accordance with the classic Harkins' model. *See* col. 4, lines 55-60. However, as mentioned above, the polymer which is the objective of Niinikoski, cannot be obtained if an emulsifier or water-soluble monomer is used. *See* col. 1, line 66- col. 2, line 12; and col. 2, lines 40-48.

Accordingly, Niinikoski teaches away from the presently claimed invention, because it discloses that a water-soluble monomer should not be used. As has been consistently held by the courts, if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Here, since Niinikoski clearly teaches that the use of water-soluble monomers drastically impair sizing and drastically impair the strength properties of paper, it would not have been obvious to the skilled artisan, at the time of the present invention, to use polymer particles (B) principally containing vinyl acetate, comprising a water-soluble monomer. Thus, since the components of the pulp sheet are entirely different from those in the presently claimed invention, Niinikoski cannot teach or suggest the pulp sheet recited in claims 7 and 8 of the present invention.

The above-noted deficiencies of Niinikoski cannot be cured with Gramera and/or Brandrup. Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections.

In view of the foregoing, Applicants believe the pending application is in condition for allowance. A Notice of Allowance is earnestly solicited.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Monique T. Cole, Reg. No. 60,154 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____
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